# Louisiana Department of Environmental Quality (LDEQ)
# Office of Environmental Services

# STATEMENT OF BASIS

**Pine Prairie Energy Center LLC**
**Pine Prairie Energy Center**
**Easton, Evangeline Parish, Louisiana**
**Agency Interest Number: 123347**
**Activity Number: PER20090001**
**Proposed Permit Number: 0920-00059-V1**

## I. APPLICANT

**Company:**
Pine Prairie Energy Center LLC
PO Box 4648
Houston, Texas 77210-4648

**Facility:**
Pine Prairie Energy Center
15 Mi N of Eunice, 1 Mi W of
Easton, Evangeline Parish, Louisiana
Approximate UTM coordinates are 533.043 kilometers East and 3401.783 kilometers North, Zone 15

## II. FACILITY AND CURRENT PERMIT STATUS

The Pine Prairie Energy Center will receive sweet natural gas via pipeline. This gas will be routed through filter/separators and compressed for injection into solution mined salt dome storage caverns. Additionally, the facility will provide for the withdrawal of natural gas from each cavern for delivery to the sales pipeline. A majority of the compression capacity of the facility will be required during the injection phase of the storage cycle, but a limited amount of compression will also be required during the withdrawal phase. Compression will be provided by twelve (12) lean-burn natural gas-fired engines.

During withdrawal, high pressure natural gas will be reduced from cavern pressure to the facility's operating pressure. Following pressure reduction and filtration, the gas will be processed through the dehydration plant consisting of three dehydration units. Wet gas will flow to a triethylene glycol (TEG) contactor, where a counter flowing stream of lean TEG will absorb the entrained water vapor. Dry natural gas will leave the dehydration unit for metering into the sales pipeline. Water-laden TEG will then be sent to a distillation unit consisting of three (3) reboilers for regeneration. Depending on the water vapor content of the withdrawn cavern gas, a portion of the gas may bypass the dehydration system to be blended with dry, dehydrated gas downstream of the TEG contactor. This blending allows the facility to efficiently process gas to meet pipeline quality specifications, reduces still vent emissions to the condenser/oxidizers, and reduces fuel consumption and exhaust emissions from the

reboilers. Each dehydration unit will have a maximum gas processing capacity of 250 mmscf/day, for a total plant capacity of 750 mmscf/day.

## III. PROPOSED PROJECT/PERMIT INFORMATION

### Application

A permit application and Emission Inventory Questionnaire were submitted by Pine Prairie Energy Center LLC on March 4, 2009, requesting a Part 70 operating permit. Additional information dated April 27, 2009 was also received.

### Project

Pine Prairie Energy Center will enlarge two of its existing storage caverns and develop two additional storage caverns, which will increase the storage capacity of the facility from 24 billion cubic feet to 48 billion cubic feet.

With this modification, Pine Prairie Energy Center proposes to:

- Delete one engine from the permit (EQT 19);
- Add a 374 HP Emergency Generator Diesel Engine (Source ID No. EGE-01) to the permit as an Insignificant Activity;
- Incorporate the 400 BBL MEOH Storage Tank (EQT 31) as a permitted source instead of an Insignificant Activity;
- Incorporate two (2) Aqueous NH3 (17%) Storage Tanks as permitted sources (EQT 32 and EQT 33). These sources were previously considered to be Insignificant Activities;
- Install six (6) lean-burn, natural gas fired engines (EQTs 25 – 30); and
- Increase the number of components that contribute to fugitive emissions in order to accommodate this project.

### Proposed Permit

Permit 0920-00059-V1 will be the Part 70 operating permit modification for the Pine Prairie Energy Center.

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**Permitted Air Emissions**

Estimated emissions in tons per year are as follows:

| Pollutant | Before | After | Change |
|---|---|---|---|
| $PM_{10}$ | 0.71 | 0.68 | - 0.03 |
| $SO_2$ | 0.90 | 1.01 | + 0.11 |
| $NO_X$ | 241.65 | 322.61 | + 80.96 |
| CO | 195.37 | 203.50 | + 8.13 |
| VOC | 35.44 | 128.89 | + 93.45 |

## IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

**Applicability and Exemptions of Selected Subject Items**

| ID No: | Requirement | Notes |
|---|---|---|
| EQTs 1-3, 7-18, 25-30 | Emission Standards for Sulfur Dioxide [LAC 33:III.Chapter 15] | DOES NOT APPLY. Units emit less than 5 tons of $SO_2$ per year. [LAC 33:III.1502.A.3] |
| EQTs 13 - 16 | NSPS JJJJ—Standards of Performance for Stationary Spark Ignition Internal Combustion Engines [40 CFR 60.4230] | DOES NOT APPLY. Engines were ordered prior to June 12, 2006 and manufactured prior to July 1, 2007. [40 CFR 60.4230(a)(4)(i)] |
| | NESHAP ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines | DOES NOT APPLY. Each engine is an existing compression ignition stationary RICE. [40 CFR 63.6590(b)(3)] |
| | Compliance Assurance Monitoring [40 CFR 64] | DOES NOT APPLY. A CAM Plan is not due until the first renewal of the permit. [40 CFR 64.5(a)(3)] |

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| ID No: | Requirement | Notes |
|---|---|---|
| EQT 20 | Control of Emission of Organic Compounds Storage of Volatile Organic Compounds [LAC 33:III.2103] | EXEMPT. Storage tank capacity is less than 420,000 gallons, contains crude oil or condensate, and is located in an attainment parish. [LAC 33:III.2103.G] |
| | NSPS Subpart Kb – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commences after July 23, 1984. [40 CFR 60.110b] | DOES NOT APPLY. Tank capacity is less than 75 cubic meters. [40 CFR 60.110b(b)] |
| EQT 21 | Control of Emission of Organic Compounds Storage of Volatile Organic Compounds [LAC 33:III.2103] | DOES NOT APPLY. Storage tank contents have maximum true vapor pressure less than 1.5 psia. [LAC 33:III.2103.A] |
| | NSPS Subpart Kb – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commences after July 23, 1984. [40 CFR 60.110b] | DOES NOT APPLY. Tank capacity is less than 75 cubic meters. [40 CFR 60.110b(b)] |
| EQT 22 | Control of Emission of Organic Compounds Storage of Volatile Organic Compounds [LAC 33:III.2103] | DOES NOT APPLY. Storage tank contents have maximum true vapor pressure less than 1.5 psia. [LAC 33:III.2103.A] |
| | NSPS Subpart Kb – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commences after July 23, 1984. [40 CFR 60.110b] | DOES NOT APPLY. Tank capacity is less than 75 cubic meters. [40 CFR 60.110b(b)] |
| EQT 23 | Control of Emission of Organic Compounds Storage of Volatile Organic Compounds [LAC 33:III.2103] | DOES NOT APPLY. Storage tank contents have maximum true vapor pressure less than 1.5 psia. [LAC 33:III.2103.A] |
| | NSPS Subpart Kb – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commences after July 23, 1984. [40 CFR 60.110b] | DOES NOT APPLY. Tank capacity is less than 75 cubic meters. [40 CFR 60.110b(b)] |

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| ID No: | Requirement | Notes |
|---|---|---|
| EQT 24 | Control of Emission of Organic Compounds Storage of Volatile Organic Compounds [LAC 33:III.2103] | DOES NOT APPLY. Storage tank contents have maximum true vapor pressure less than 1.5 psia. [LAC 33:III.2103.A] |
| | NSPS Subpart Kb – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commences after July 23, 1984. [40 CFR 60.110b] | DOES NOT APPLY. Tank capacity is less than 75 cubic meters. [40 CFR 60.110b(b)] |
| EQT 31 | NSPS Subpart Kb – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commences after July 23, 1984. [40 CFR 60.110b] | DOES NOT APPLY. Tank capacity is less than 75 cubic meters. [40 CFR 60.110b(b)] |
| EQTs 17-18, 25-30 | Compliance Assurance Monitoring [40 CFR 64] | EXEMPT. Units are subject to 40 CFR 60 Subpart JJJJ, which is an emission standard proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Clean Air Act. [40 CFR 64.2(b)(1)(i)] |
| FUG 003 | Volatile Organic Compounds – Loading [LAC 33:III.2107] | EXEMPT. Facility is a crude or condensate loading facility. [LAC 33:III.2107.F] |

**Prevention of Significant Deterioration/Nonattainment Review**

Prior to the proposed modification, Pine Prairie Energy Center was not a major stationary source. Prevention of Significant Deterioration (PSD) only applies to major stationary sources. Further, the modification proposed by the facility does qualify as a major stationary source by itself. Therefore, PSD review is not required. After the modification occurs, Pine Prairie Energy Center will be a major stationary source and future modifications will potentially be subject to PSD review.

This permit approves the construction of an additional 24 billion cubic feet (BCF) of cavern storage space, in addition to the 24 BCF of storage space authorized by Permit No. 0920-00059-V0. Based on statements released by Pine Prairie Energy Center, LLC, LDEQ will consider the equipment needed to support the storage of natural gas in amounts ranging from 24 BCF up to 112 BCF as a single project for Prevention of Significant Deterioration purposes.

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**MACT Requirements**

Pine Prairie Energy Center is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. However, emissions from the combustion of Group 1 virgin fossil fuels are exempt from the requirements of LAC 33:III.Chapter 51 per LAC 33:III.5105.B.3.a.

**Air Quality Analysis**

Emissions associated with the proposed modification were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

**General Condition XVII Activities**

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

**Insignificant Activities**

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

## V. PERMIT SHIELD

There is no permit shield

## VI. PERIODIC MONITORING

**Stack Testing and Annual Engine Monitoring Requirements**

The permittee shall demonstrate compliance with the CO and $NO_X$ emission limits of this permit by performing a stack test on the internal combustion engines. Test methods and procedures shall be in accordance with New Source Performance Standards, 40 CFR 60, Appendix A, Method 7E-Determination of Nitrogen Oxides Emissions from Stationary Sources and Method 10-Determination of Carbon Monoxide Emissions from Stationary Sources. Alternate stack test methods may be used with the prior approval of the Office of Environmental Assessment, Environmental Technology Division.

The permittee shall test the internal combustion engines equipped with catalytic converters annually for $NO_X$, CO and $O_2$ concentrations in the stack gas utilizing portable analyzers that are calibrated before each test using a known reference gas sample. Concentrations of $NO_X$, CO, and $O_2$ shall be maintained in the same range as during the initial stack test. Records of these tests shall be kept on site and available for inspection by the Office of Environmental Compliance, Surveillance Division.

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**Compliance Assurance Monitoring**

Federal regulation 40 CFR 64-Compliance Assurance Monitoring is not applicable to this facility at this time.

## VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide ($H_2S$) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides ($NO_X$) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane ($CH_4$), Ethane ($C_2H_6$), Carbon Disulfide ($CS_2$)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

$PM_{10}$ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

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Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide ($SO_2$) – An oxide of sulfur.

Sulfuric Acid ($H_2SO_4$) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.